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3. *N. G. C. 7023* — *a)* 7th mag. star involved in nebulosity. The radial velocity for the nucleus given by four absorption lines is $+0.7^{km}$. *b).* Two spectrograms of the nucleus obtained with the slit spectrograph in the primary focus of the 60-inch reflector and with the slit (p-f) 13.6 seconds of arc north of the nucleus both show the same strong continuous spectrum crossed by absorption lines.

4, 5, 6. *N. G. C. 6572, N. G. C. 6826, N. G. C. 6891.*—Planetary nebulæ. Radial velocities are:—

N. G. C. 6572 (9 lines)	-12^{km}
N. G. C. 6826 (5 lines)	-8
N. G. C. 6891 (6 lines)	$+38$

The values which Keeler obtained for these nebulæ as mentioned by Campbell in "Stellar Motions," p. 210, are:—

N. G. C. 6572	-9.7
N. G. C. 6826	-5.3
N. G. C. 6891	$+40.7$

Wright's values of nebular wave-lengths were used.

Francis G. Pease.

Faint Star with Large Proper Motion.

Three pairs of plates taken in 1914 and 1915 of the region of Pi. 2^h 123 ($\alpha \doteq 2^h 30^m 36^s$, $\delta = +6° 25'$, 1900) show a star of about the 12th magnitude, $2'.6$ East, $0'.9$ South, having a proper motion of $2''.63$ in $p = 48°.9$, which is nearly the same as that of the principal star ($2.''34$ in p $51°.8$).

Assuming the parallax of the faint star to be the same as that of Pi. 2^h 123, which is given in *Publication of the Astronomical Laboratory at Groningen,* No. 24, as $+0''.143$, the absolute magnitude (apparent magnitude at a distance corresponding to parallax $0''.1$) of the faint star is about 13.

A. van Maanen.

Radial Velocities of the Planetary and Irregular Nebulæ.

The discovery in 1910 that stellar radial velocities increase in general with advancing spectral class has led to the extension of the observing program to include the gaseous planetary and extended nebulæ whose spectra are composed of bright lines, a particular point of interest in the results to be obtained being possible relationships between nebular and stellar velocities which might lead to conclusions respecting the hypothesis of the evolution of stars from nebulæ. Three hundred and forty-eight measures of the velocity of 92 nebulæ have been secured at the Lick and D. O. Mills Observatories, working respectively in the northern and southern skies. Single prism spectrographs with cameras of 16 and 18 inches focal length have been used for the brighter objects, particularly the planetary nebulæ, but for the fainter and extended nebulæ, two- and three-prism instruments with 8- and 5-inch cameras have been employed. The advantage of the latter combinations is obvious from the fact that the 3-prism spectrograph, for example, is found to be five or six times as rapid as the one-prism, long-camera instruments, while the linear dispersion is the same. By means of these combinations the two green lines of nebulium and the hydrogen line $H\beta$ and occasionally the line at 4686 A have been photographed with exposures ranging from one to 18 hours. The measures of velocity obtained from the plates show probable errors ranging from one to four kilometers, depending upon the intensities and number of lines measured.

The results deduced from the observations depend upon 80 out of the total 92 values of velocity, 12, which relate to nebulæ in the Magellanic Clouds, having been excluded because attended by extraordinary circumstances. Seven pertain to the extended or irregular nebulæ and 73 to the regular forms as planetary and annular. All velocities having been freed from the effect of the solar motion, average velocities of the various groups are found to be:—

Of	7 extended nebulæ	10 kilometers
"	39 disks and rings	29 "
"	34 stellar nebulæ	50 "
"	73 regular forms	39 "

From this it is obvious that velocity increases with respect to the order: extended, disk, stellar forms. It can scarcely be questioned that the planetary nebulæ may become helium stars, but the hypothesis that helium stars, whose radial velocities thus far observed average 6 kilometers, have in all cases evolved from planetary nebulæ appears untenable in view of the six- or seven-fold greater average velocity of planetary nebulæ.

A further significant result is the accordance of the value of the solar motion derived from these nebular velocities with that of 20.2 kilometers derived from Class B stars: namely, 20.1 kilometers from the 73 nebulæ of regular form, and 20.7 kilometers from the 7 extended nebulæ. It is thus clear that the extended and planetary nebulæ are associated, at least in respect to their peculiar motions, with our stellar system. The evidence of association of the nebulæ with our stellar system is strengthened by strong indications of preferential motions in the direction of the vertices of Kapteyn's two star streams. This is shown in two ways, first by a tabulation with respect to distance from the vertices and second with respect to distance from the central plane of the Milky Way.

W. W. Campbell,
J. H. Moore.

Note on Hind's Variable Nebula.

This nebula (N. G. C. 1554), close to the irregularly variable star T *Tauri,* is an object of special interest in that it affords us probably the only absolutely authentic evidence of change in this class of objects. It was discovered by Hind in 1852, and was seen easily and measured by Struve, D'Arrest, Lassell, and others, but had disappeared by October, 1861. The various observations are so definite that there is no chance for error. D'Arrest, for instance, describes it as quite bright, about 1′ in diameter, and saw it easily in the light of the five-day-old moon. In 1890, Professor Barnard described it as at the limit of visibility with the 36-inch refractor.

Five plates have been taken of this region with the Crossley Reflector; the dates and exposures are:—

1899, December 6th,	exposure	$3^h\ 52^m$
1899, December 27th,	"	4 00
1914, March 27th,	"	1 20
1914, November 16th,	"	3 00
1914, November 20th,	"	2 30

The nebula is of the utmost faintness on all these plates, but is apparently a little brighter in 1914. It is difficult to resist the impression that it has become somewhat brighter, tho the